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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/495,971	02/02/2000	Sarit Neter	YMEDIA.002A	5523
28112	7590	02/26/2004	EXAMINER	
GEORGE O. SAILE & ASSOCIATES 28 DAVIS AVENUE POUGHKEEPSIE, NY 12603			HENN, TIMOTHY J	
			ART UNIT	PAPER NUMBER
			2612	9
DATE MAILED: 02/26/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/495,971

Applicant(s)

NETER, SARIT

Examiner

Timothy J Henn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 2,5,11,24,25,27,34,37 and 38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-10,12-23,26,28-33,35,36,39 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3,4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of species associated with Figure 4 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that "the field of search must necessarily cover all species". This is not found persuasive because the non-elected species contain features which would not be included in a class/subclass search or text search for the elected species.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 2, 5, 11, 24, 25, 27, 34, 37 and 38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1, 3, 4, 6-8, 12, 15, 16, 19, 20, 26, 28-31, 33, 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Boisvert et al. (US 5,329,312).

[claim 1]

6. In regard to claim 1, note that Boisvert et al. discloses a color imaging system comprising:

7. an array of pixel sensor elements (Column 6, Lines 22-26);

8. a color filter including a plurality of color filter components organized in a predefined pattern, the color filter overlaying at least a portion of the array, wherein the pixel sensor elements include at least one element associated with a first color filter component, at least one element associated with a second color component and at least one element associated with a third color component (Column 6 Lines 28-30);

9. a first, second and third analog compensation unit coupled to at least one element associated with the first, second and third color filter components, respectively, the analog compensation units adapted to modify a readout of at least one element associated with the respective color component (Column 6, Lines 28-45); and

10. an array controller adapted to control the readout of the elements associated with the first second and third color components (Column 10, Lines 37-58; The office notes

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that it is inherent for the process described in column 10 to be controlled by an array controller, even though such a controller is not disclosed in Boisvert et al.).

[claim 3]

11. In regard to claim 3, note that Boisvert et al. discloses an array which is arranged in a plurality of rows and columns (Column 6, Lines 23-26).

[claim 4]

12. In regard to claim 4, note that Boisvert et al. discloses an (inherent) array controller adapted to control readout of a plurality of pixel sensor elements in parallel (Figure 5).

[claims 6-8]

13. In regard to claims 6-8, note that the analog compensation units are programmable gain amplifiers which are implemented as a separate stage (Column 13, Line 59 – Column 14, Line 22; Figures 1 and 2).

[claim 12]

14. In regard to claim 12, note that Boisvert et al. discloses color filters components including the colors of red, blue and green (Column 6, Lines 28-30).

[claim 15]

15. In regard to claim 15, note that Boisvert et al. discloses an (inherent) array controller which causes a plurality of substantially simultaneous, independent readouts for a plurality of rows and some columns (Figure 5).

[claims 16 and 19]

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16. In regard to claims 16 and 19, note that Boisvert et al. discloses pixel sensor elements which form a portion of a inherently passive charge coupled device (Column 6, Lines 16-21).

[claim 20]

17. In regard to claim 20, note that at least a first pixel sensor element of Boisvert et al. is associated with a different color than a second, neighboring pixel sensor element (Column 6, Lines 28-30; The office notes that if an array of pixel sensor elements contain at least two colors, it is inherent that two neighboring pixel sensor elements must be associated with a different color filter component at some point in the array).

[claim 26]

18. In regard to claim 26, note that Boisvert discloses a method of compensating color response in an analog domain of an array of pixel sensor elements comprising:

19. amplifying an analog output from a plurality of elements of a first color component (Column 6, Lines 31-34);

20. amplifying an analog output from a plurality of elements of a second color component (Column 6, Lines 34-36); and

21. generating a compensated analog readout of the plurality of elements of the first color component (Column 6, Lines 40-45).

22. [claim 28]

23. In regard to claim 28, note that the act of generating a compensated analog readout comprises amplifying the analog readout for the plurality of elements of the first

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color component with a first programmable amplifier (Column 6, Lines 31-45).

[claim 29]

24. In regard to claim 29, note that Boisvert et al. discloses determining a desired or “optimal” level of color compensation for the analog readout of the plurality of elements of the first color component (Column 6, Lines 40-45).

[claim 30]

25. In regard to claim 30, note that the generation of a compensated analog readout depends on a temperature of the system (Column 13, Lines 20-24).

[claim 31]

26. In regard to claim 31, note that Boisvert et al. discloses pixel sensor elements associated with the colors of red, blue and green (Column 6, Lines 28-30).

[claim 33]

27. In regard to claim 33, note that Boisvert et al. discloses an act of generating comprising generating a plurality of substantially simultaneous, independent readouts for the set of rows and the set of columns (Figure 5).

[claim 35]

28. In regard to claim 35, see claim 1.

[claim 36]

29. In regard to claim 36, see claim 3.

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30. Claims 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Dillon et al. (US 4,176,373).

[claim 39]

31. In regard to claim 39, note that Dillon et al. discloses a method of interpolating a color value in the analog domain in real-time, comprising:

32. modifying a first analog signal corresponding to the output of a first pixel element in an imager to color correct the first pixel, wherein the first pixel element is used to sense light intensity of a first color; and

33. modifying a second analog signal corresponding to the output of a second pixel element in an imager to color correct the second pixel, wherein the second pixel is used to sense light intensity of a second color (Figure 4).

34. [claim 40]

35. In regard to claim 40, note that Dillon further discloses a method comprising modifying a third analog signal corresponding to the output of a third pixel in the imager to color correct the third pixel (Figure 4).

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

37. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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38. Claim 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boisvert et al. (US 5,329,312) in view of Zhou et al. (IEEE).

[claims 9 and 10]

39. In regard to claims 9 and 10 it can be seen that Boisvert et al. disclose all limitations except for programmable gain amplifiers contained within the pixel circuitry and within a plurality of column buffers. However, such a system is well known in the art, (for example see Zhou, Figures 1 and 2) as a way to reduce the overall size of imaging systems. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the design of Boisvert et al. with the gain amplifiers of Zhou contained in the pixel circuitry of the array in a plurality of column buffers to reduce the overall size.

40. Claims 13, 14, 17, 18, 21, 22 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boisvert et al. (US 5,329,312).

[claims 13 and 14]

41. In regard to claims 13 and 14, Boisvert et al. discloses all limitations except for the interlaced or odd and even readout modes of columns and rows. However, the use of independent readout of even and odd rows or columns is well known in the art to create industry standard NTSC TV signals or to reduce the amount of data readout during for a frame when a high frame rate is more important than high resolution. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use even and odd row or column readout with the imaging

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system of Boisvert et al. to create NTSC TV signals or to reduce the resolution in order to achieve higher frame rates.

[claims 17 and 18]

42. In regard to claims 17 and 18, Boisvert et al. discloses all limitations except for an active CMOS imaging sensor device. However, it is well known in the art that active CMOS image sensors can replace CCDs in many applications, and Boisvert et al. specifically discloses that the imaging system is not limited to a CCD imaging unit (Column 15, Lines 38-41). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an active CMOS image sensor in the imaging system of Boisvert et al. to allow for non-destructive readout of the image sensor (Official Notice).

[claim 21]

43. In regard to claim 21, note that Boisvert et al. discloses all limitations except for color components organized in a Bayer color pattern. However, the use of the Bayer color pattern is well known in the art for its ability to provide a greater amount of luminance data than chrominance data in a way similar to human vision, see Bayer (US 3,971,065). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a Bayer color filter to more closely mimic human vision (Official Notice).

[claim 22]

44. In regard to claim 22, note that Boisvert et al. discloses all limitations except for a complementary color scheme include yellow, cyan and magenta color filters. However,

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the use of yellow, cyan and magenta is a well known design alternative to the use of red, green and blue color filters as is well known in the art. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use yellow, cyan and magenta color filters to achieve color images (Official Notice).

[claim 32]

45. In regard to claim 32, note that Boisvert et al. discloses an image sensor with red, green and blue color filter components coupled to first, second and third programmable gain amplifiers respectively. Therefore, it can be seen that Boisvert et al. lacks a controller which generates independent readout for even rows, odd rows, even columns and odd columns. However, it is well known in the art that active CMOS image sensors can replace CCDs in many applications, and Boisvert et al. specifically discloses that the imaging system is not limited to a CCD imaging unit (Column 15, Lines 38-41). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an active CMOS image sensor in the imaging system of Boisvert et al. to allow for non-destructive readout of the image sensor (Official Notice).

46. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boisvert et al. (US 5,329,312) in view of Sano et al. (IEEE).

[claim 23]

47. In regard to claim 23, note that Boisvert et al. discloses all limitations except for a micro-lens layer. However, the use of micro-lens layers on image sensors is well known

in the art to increase photosensitivity of the image sensor arrays, for example see Sano et al. (IEEE). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a micro-lens layer with the imaging system of Wada et al. to increase photosensitivity.

Conclusion

48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art further shows the current state of the art concerning image sensors and color balance.

i.	Bayer	US 3,971,065
ii.	Roberts	US 5,541,654
iii.	Zhang	US 5,790,191
iv.	Harada	US 6,141,049


49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J Henn whose telephone number is (703) 305-8327. The examiner can normally be reached on M-F 7:30 AM - 5:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
2/20/2004



NGOC-YEN VU
PRIMARY EXAMINER